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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/133,741    08/13/98    BALDWIN

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ROBERT GROOVER  
17000 PRESTON ROAD #230  
DALLAS TX 75248

PM82/1121

EXAMINER
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NGUYEN, T

ART UNIT	PAPER NUMBER
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3661

DATE MAILED:

11/21/00

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
09/133,741

Applicant(s)  
Baldwin

Examiner  
Thu Nguyen

Group Art Unit  
3661



☒ Responsive to communication(s) filed on Sep 25, 2000

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1-27, 29-37, and 39-46 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1-27, 29-37, and 39-46 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-27, 29-37, 39-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossin et al (U.S Patent No. 5,877,773) in view of Watkins et al (U.S Patent No. 5,361,386) and further in view of Narayanaswami (U.S Patent No. 5,613,052).

As per claim 1, 6, Rossin et al teaches a method for clipping graphics primitives. The method comprises the steps of: using a clipping algorithm with a circular buffer to store input and output polygons of the primitive (fig.5A; col.9, lines 60-67 and col.10, lines 1-27; and col.4, lines 17-32).

Rossin et al does not teach defining all vertices of a primitive using relational coordinates. However, Watkins et al teaches defining all vertices of a primitive using relational coordinates as claimed (col.9, lines 66-68 and col.10; and col.11). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to define the vertices of a primitive in barycentric coordinate as taught by Watkins et al in the clipping method of Rossin et al. The motivation for this would have been to facilitate interpolation to determine the color and light of

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the intercepted points of the clipping planes and the polygon and to easily determine if a point on the clipping plane is inside or outside the polygon as taught by Watkins et al in abstract and col.9, lines 4-17.

Rossin et al does not explicitly teach indicating visibility with respect to each plane of a view volume for each vertex. However, Narayanaswami teaches indicating whether each vertex is visible with respect to each plane of a view volume (col.5, lines 44-63). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to indicate visibility for each vertex of the polygon of Rossin et al. The motivation for that would have been to perform clipping and lighting calculation according to the visibility indication of the vertex as taught by Narayanaswami in col.8, lines 31-36.

As per claim 2, rasterizing only vertices which are visible in all planes would have been well known to a person of ordinary skill in the art at the time the invention was made.

As per claim 3, Narayanaswami teaches performing clipping prior to lighting or texture calculation (col.1, lines 53-67).

As per claim 4-5, Rossin et al teaches polygon and triangle primitive (col.1, lines 24-33).

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As per claim 7, using frustum view volume as clipping planes would have been well known to a person of ordinary skill in the art at the time the invention was made. It would have been an obvious choice to a person of ordinary skill in the art at the time the invention was made to use the well known frustum volume instead of the clipping planes of Rossin et al.

As per claim 8-10, Rossin et al teaches there are six or more planes in view volume (col.3, lines 31-36).

As per claim 11, Rossin et al teaches Sutherland and Hodgman clipping algorithm (col.19, lines 53-58).

As per claim 12-13, Narayanaswami teaches indicating vertex visibility by a bit flag (col.5, lines 44-67; and col.6, lines 1-14). Narayanaswami does not teach 12 bit visibility flag. However, Narayanaswami teaches selecting the number of the visibility bit flag according to the number of non-overlapping region (col.5, lines 44-52). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to select the twelve bit flag when the twelve clipping planes of Rossin et al is used.

As per claim 14, Rossin et al does not teach using two circular buffers to store input and output polygons. However, Rossin et al teaches using circular buffer (fig.5A; col.9, lines 60-67

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and col.10, lines 1-27; and col.4, lines 17-32). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to integrate duplicate circular buffer of Rossin et al, because integrating duplicated circular buffer together involves only routine skill in the art (St. Regis Paper Co. v. bennis Co., 193 USPQ 8).

As per claim 15, Rossin et al teaches a circular buffer with maximum storage of sixteen vertices (col.5, lines 44-48).

As per claim 16-27, 29-37, and 39-46, refer to discussion in claims 1-8, 11-12, 14-15 above. Further, as to claim 19, Naraynaswami discloses including outcode value (c3, c2, c1 and c0 in col.5, lines 58-61) that indicates whether the vertex is visible with respect to each plane ( $x=-1$ ,  $x=1$ ,  $y=-1$ ,  $y=1$ ) of the view frustum. Further, as to claim 36, and 43, the claimed display, processor, and video rendering hardware would have been very well known to a person of ordinary skill in the art. Rossin et al does not teach using two circular buffers to store input and output polygons. However, Rossin et al teaches using a circular buffer which stores input and output polygon (fig.5A; col.9, lines 60-67 and col.10, lines 1-27; and col.4, lines 17-32). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to integrate duplicate circular buffer of Rossin et al, because integrating duplicated circular buffers together involves only routine skill in the art (St. Regis Paper Co. v. bennis Co., 193 USPQ 8).

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***Response to Arguments***

A request for interview on September 25, 2000 from applicant has been received. However, with the applicant's explanation in the amendment filed on September 25, 2000, examiner believes that the specific issues is clarified. Examiner also believes that it would be more beneficial to applicant to review the following explanation from examiner in order to be prepared with a proposed amendment of claims before an interview should be conducted. As suggested in the MPEP 713.01 that an interview should be had only when the nature of the case is such that the interview could serve to develop and clarify specific issues and lead to a mutual understanding between the examiner and the applicant, and thereby advance the prosecution of the application.

In response to applicant's argument on page 7, third and fourth paragraph "Rossin et al does not show the use of circular buffers ... the circular buffer taught in the present application requires only one buffer". Although, applicant explains that the circular buffer of the present invention and the sequential processing allows the use of only one buffer instead of having to use an extra look up table buffer to store the index of the polygon information, independent claims 1, 16, 36, 43 do not explicitly disclose the feature. Independent claims 1, 16, 36 and 43 just defines the circular buffer as a memory which stores input and output of polygons of the primitive. In fig.5A, Rossin et al discloses using a buffer (the vertex look up table) which stores the input and output list of polygons of the primitive. This reads on the claimed limitation in independent claims 1, 16, 36, and 43. Examiner agrees with applicant's explanation that Rossin et al's invention

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allows exchanging data anywhere in the in the VRAM as stated in col.11, lines 66-67. However, independent claims 1, 16, 36, and 43 do not explicitly exclude the use of separate buffers which are ping-ponged between each other as explained.

In response to applicant's argument on page 8, last two paragraphs, examiner admits that none of the references suggest the use of two buffers instead of one. However, Rossin et al teaches using a circular buffer which stores input and output polygon (fig.5A; col.9, lines 60-67 and col.10, lines 1-27; and col.4, lines 17-32). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to integrate duplicate circular buffers of Rossin et al, because integrating duplicated devices together involves only routine skill in the art (St. Regis Paper Co. v.bennis Co., 193 USPQ 8).

### *Notice*

The examiner in charge of this application has been transferred to the new art unit 3661. Please indicate the appropriate art unit in future correspondence.

3. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after



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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

**Any response to this final action should be mailed to:**

**Box AF**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 305-7687, (for formal communications; please mark "EXPEDITED  
PROCEDURE")

**Or:**

(703) 305-7687 (for informal or draft communications, please label  
"PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park V, 2451 Crystal  
Drive, Arlington, VA., Seventh Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu Nguyen whose telephone number is (703) 306-9130. The examiner can normally be reached on Monday-Thursday from 8:00 am to 5:00 pm ET.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Cuchlinski, can be reached on (703) 308-3873. The fax phone number for this Group is (703)305-7687 .

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703)308-1113.

NTV

November 20, 2000

  
WILLIAM A. CUCHLINSKI, JR.  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3600